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Forest Service, United States Department of Agriculture,

ALLEGHENY FOREST EXPERIMENT STATION*

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Technical Note No. 6.

RELATIVE HEIGHT GROWTH OF ALLEGHENY HARDWOODS

The total height of 1373 trees, of ten species and a wide range of diameters, was measured with a Forest Service hypsometer in a stand on Little Arnot Creek, a tributary of Tionesta Creek, in Warren County, Pennsylvania. Values read from height curves are given in the following table:

Total height (feet)

DBH (inches)	Species									
	Beech	Sugar maple	Red maple	White ash	Black cherry	Bass-wood	Sweet birch	Yellow birch	Hem-lock	Hop-hornbeam
1	14	14	14	-	-	15	16	18	8	15
2	23	25	24	-	-	25	28	30	12	26
3	31	35	34	40	-	34	39	40	15	36
4	39	45	44	47	47	43	48	48	19	44
5	46	54	52	55	53	51	54	54	23	50
6	52	61	59	60	58	57	59	58	27	54
7	56	67	65	65	62	62	62	61	31	57
8	60	71	69	69	66	67	65	64	36	59
9	63	74	72	72	70	71	66	66	41	62
10	66	76	75	76	74	74	67	67	45	65
11	68	78	77	79	77	77	68	68	49	67
12	70	79	79	82	80	80	69	69	53	69
13	72	80	80	85	83	82	69	70	56	72
14	74	80	81	88	86	83	69	71	59	74
15	76	81	81	91	88	84	70	72	62	-
16	78	-	-	94	90	85	-	-	-	-
17	80	-	-	97	92	86	-	-	-	-
18	81	-	-	100	94	86	-	-	-	-
19	83	-	-	-	-	87	-	-	-	-
20	85	-	-	-	-	87	-	-	-	-
Basis, No. of trees	213	348	64	136	188	106	84	126	50	58

Heights of beech above 20 inches d.b.h. were as follows: 21" - 86'; 22" - 88'; 23" - 90'; 24" - 91'; 25" - 93'; 26" - 94'; 27" - 96'; and 28" - 97'.

*Maintained at Philadelphia, Pa., in cooperation with the University of Pennsylvania.

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A practical use of this table is in reading heights for trees of known diameter when using a volume table based on d.b.h. and total height. It must be recognized that but one locality is included in the construction of these curves, and that site and composition may be quite different elsewhere within the northern hardwood type, with resultant changes in the height-diameter relationship of given species.

The stand from which these measurements were taken followed a heavy cutting for hemlock bark made in a virgin forest about 1868. Black cherry, red maple, basswood, white ash, pin (fire) cherry, and sweet and yellow birches seeded in promptly, as shown by ring counts, and developed in competition with a few large and some suppressed beech and sugar maple trees spared in the logging. A few small hemlock also survived and grew rapidly with the surrounding hardwoods. In 1928 a tally of the number of trees 2" d.b.h. and over on 4 acres gave the following percentage composition: sugar maple 38 per cent; beech, 20 per cent; yellow birch, 9 per cent; black cherry and red maple, 7 per cent each; hemlock, white ash, and basswood, 4 per cent each; sweet birch, 3 per cent; and minor species, 4 per cent.

The dominance of 15-inch d.b.h. black cherry, white ash, and basswood over beech, the maples, birches, and hemlock is readily seen in the table. Hop-hornbeam maintains a surprisingly good height growth and threatens to be a formidable weed tree. Because the hemlock curve was based chiefly on suppressed understory trees, the true competitive ability of this species is not shown.

A. F. Hough,
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